

Craig's Guide to Switches

Switches are simple enough in their operation, but all the jargon describing them can be a bit fuzzy. The styles of switches e.g. 'toggle' or 'rocker' are fairly descriptive and easy enough to see. The "action" of the switch however is not immediately obvious — Take the humble doorbell switch: it is a *single pole momentary action push-to-make button* switch.

Single pole — it has one conducting path

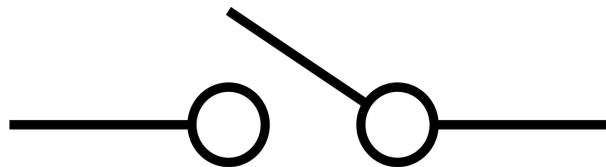
Momentary action — it only operates for as long as force is applied (as opposed to latching)

Push-to-make — when pushed, the contacts close (as opposed to push-to-break)

Button — that's just the style of the switch

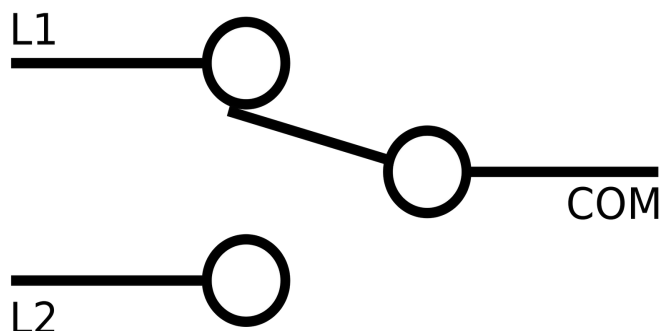
A simple on/off switch has just one conducting path (known as a pole) and can make or break just one contact (known as the throw).

This type of switch is known as a **Single Pole Single Throw**, or **SPST**.



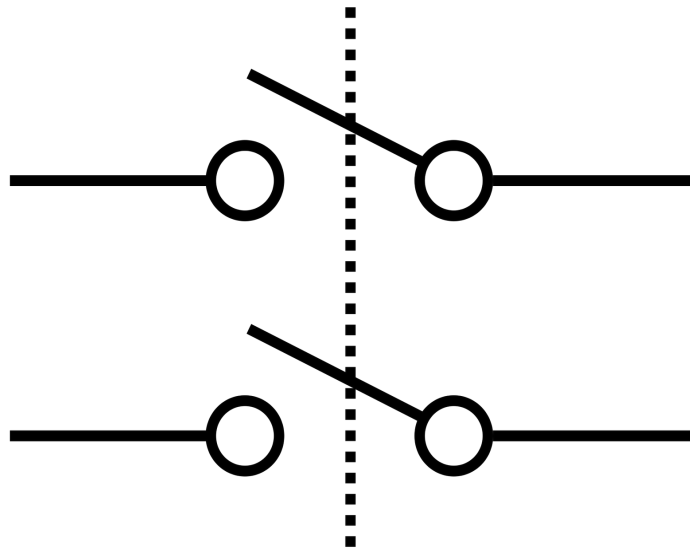
The following switch has still just one conducting path i.e. it is Single Pole, but it has two contacts. This type of switch is commonly used in houses for the stair light switches, on devices like the store's vacuum cleaner to select between 'Low' and 'High' settings...

It is **Single Pole Double Throw** and is designated **SPDT**.

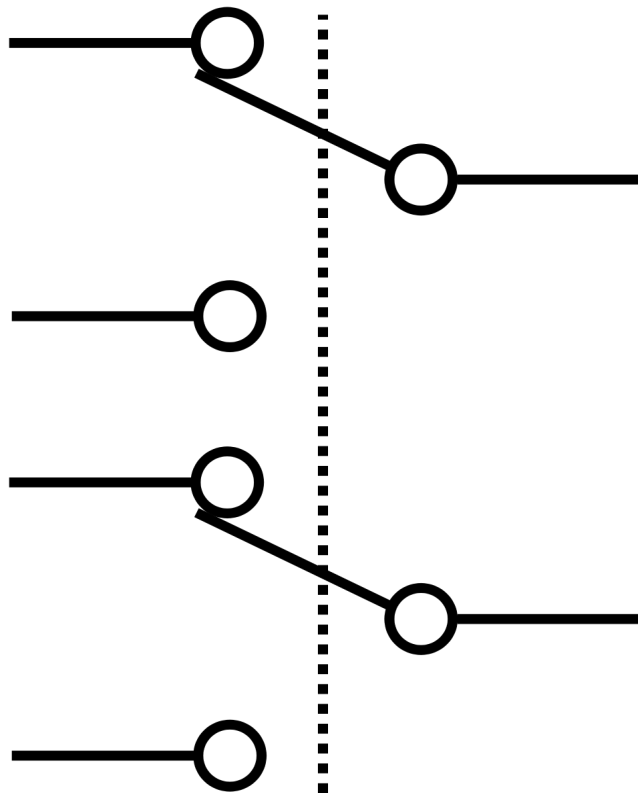


This next example has two conducting paths which are electrically isolated from each other yet mechanically joined, such that they operate simultaneously as a pair of on/off switches. The dotted line denotes this non-conducting mechanical connection.

This switch is designated **DPST (Double Pole Single Throw)**.



This fourth example is a combination of the first two, having two conducting paths each with two contacts. It is a **Double Pole Double Throw** switch and designated **DPDT**.



NOTE: Relays have the same designations for their contacts!

Rotary switches can have many combinations of the above. For example a 1-pole 12-way rotary switch has a single conduction path with 12 possible connections.

A 4-pole 3-way rotary switch has four conduction paths each with 3 possible connections, (but remember that they all change at the same time as they are mechanically joined).



NOTE: They key things to look for when finding a suitable switch for a customer, apart from the above, are the voltage and current ratings of the switch. So ALWAYS ask what they intend to use the switch for!

A switch with higher-than-required ratings will be fine, it will often just be bigger, but if the voltage rating is too low it could lead to electrical arcing when the switch operates, and if the current rating is too low the whole switch could just overheat / melt / burst into flames.

This is often one of the trickiest parts to help find for a customer, as you may have to consider some of the following:

- electrical operation e.g. SPDT
- electrical characteristics e.g. 16A 250VAC
- style e.g. rocker, slider, toggle, push
- colour
- size
- if it's illuminated (usually fitted with at least one extra terminal for the light); the voltage that the lamp or LED inside requires — view the specifications
- does it need to be heavy-duty
- how will the customer connect it up; by soldering? With crimp connectors?

SALES

Crimp connectors if required, soldering iron and solder, heatshrink for safety and neatness.

Does the customer require a soldering iron?

The Antex irons are excellent quality (Craig's personal recommendation!) and the 18W variant [FY62] is a great all-rounder for small electronic jobs.

The soldering iron stand FR20 is very sturdy and comes with a sponge for cleaning the tip too.

(Tip packs N14FR & N15FR fit the above-mentioned iron)

What about solder?

A de-soldering pump to help remove the faulty component? [N40CH]

If the customer has never soldered before, we sell a small book called 'The Art of Soldering' [CJ23] for just £3.99